# Supplementary Information

This document contains supplementary information for the article:

Jenkins, G.T.H., Duller, G.A.T., Roberts, H.M., Chiverrell, R.C. and Glasser, N.F. “A new approach for luminescence dating glaciofluvial deposits - high precision optical dating of cobbles” published in Quaternary Science Reviews

*Table S1: $L_n/T_n$ values for rock slices from Orrisdale, Data are shown graphically in Figure 6a.*

| ***ORS02-1-C*** | | | | | ***ORS02-1-D*** | | | | | ***ORS02-1-E*** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Depth (mm)* | *$IRSL_{50}$* | | *Post-IR $IRSL_{225}$* | | *Depth (mm)* | *$IRSL_{50}$* | | *Post-IR $IRSL_{225}$* | | *Depth (mm)* | *$IRSL_{50}$* | | *Post-IR $IRSL_{225}$* | |
| 0.75 | 7.09 | ± 0.15 | 11.95 | ± 0.31 | 0.5 | 6.34 | ± 0.16 | 10.42 | ± 0.30 | 0.75 | 8.10 | ± 0.19 | 11.08 | ± 0.27 |
| 2 | 7.28 | ± 0.15 | 9.90 | ± 0.22 | 1.5 | 8.84 | ± 0.19 | 12.48 | ± 0.28 | 2 | 8.13 | ± 0.18 | 10.36 | ± 0.23 |
| 6 | 7.51 | ± 0.18 | 13.46 | ± 0.41 | 5.5 | 6.97 | ± 0.16 | 12.67 | ± 0.58 | 3 | 7.36 | ± 0.16 | 11.21 | ± 0.26 |
| 7.5 | 8.51 | ± 0.18 | 10.90 | ± 0.24 | 6.5 | 6.59 | ± 0.15 | 10.55 | ± 0.25 | 4 | 6.62 | ± 0.15 | 9.49 | ± 0.24 |
| 8.5 | 8.20 | ± 0.17 | 14.59 | ± 0.34 | 7.5 | 7.10 | ± 0.15 | 12.27 | ± 0.28 | 5 | 5.82 | ± 0.14 | 8.57 | ± 0.26 |
| 9.5 | 10.37 | ± 0.22 | 11.79 | ± 0.26 | 8.5 | 7.90 | ± 0.18 | 10.83 | ± 0.24 | 6 | 6.29 | ± 0.14 | 7.95 | ± 0.31 |
| 10.5 | 9.70 | ± 0.21 | 10.34 | ± 0.23 | 9.5 | 8.14 | ± 0.18 | 10.48 | ± 0.23 | 7 | 6.23 | ± 0.14 | 8.59 | ± 0.27 |
| 11.5 | 9.71 | ± 0.21 | 10.57 | ± 0.23 | 10.5 | 8.55 | ± 0.19 | 10.90 | ± 0.24 | 8 | 6.58 | ± 0.15 | 9.97 | ± 0.25 |
| | | | | | 11.5 | 7.86 | ± 0.17 | 12.00 | ± 0.28 | 9 | 7.13 | ± 0.16 | 10.30 | ± 0.25 |
| | | | | | 12.5 | 7.28 | ± 0.16 | 9.98 | ± 0.23 | 10 | 6.52 | ± 0.15 | 9.31 | ± 0.23 |
| | | | | | | | | | | 11 | 5.88 | ± 0.18 | 8.74 | ± 0.62 |
| | | | | | | | | | | 12 | 6.91 | ± 0.18 | 6.86 | ± 0.49 |
| | | | | | | | | | | 15 | 6.80 | ± 0.15 | 10.00 | ± 0.31 |
| | | | | | | | | | | 16 | 6.61 | ± 0.15 | 9.65 | ± 0.25 |
| | | | | | | | | | | 17 | 6.79 | ± 0.15 | 8.91 | ± 0.23 |
| | | | | | | | | | | 18 | 7.96 | ± 0.17 | 10.31 | ± 0.24 |
| | | | | | | | | | | 19 | 7.63 | ± 0.17 | 9.45 | ± 0.21 |
| | | | | | | | | | | 20 | 8.21 | ± 0.18 | 10.52 | ± 0.23 |
| | | | | | | | | | | 21 | 8.88 | ± 0.19 | 9.69 | ± 0.21 |
| | | | | | | | | | | 22 | 7.27 | ± 0.16 | 10.00 | ± 0.23 |
| | | | | | | | | | | 23 | 8.51 | ± 0.19 | 10.74 | ± 0.24 |
| | | | | | | | | | | 24 | 7.20 | ± 0.16 | 9.58 | ± 0.22 |

*Table S2: $L_n/T_n$ values for rock slices from Orrisdale, Data are shown graphically in Figure 6b.*

| ***ORS02-1-F*** | | | | | ***ORS02-1-G*** | | | | | ***ORS02-1-H*** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Depth* | | | | | *Depth* | | | | | *Depth* | | | | |
| *(mm)* | *$IRSL_{50}$* | | *Post-IR $IRSL_{225}$* | | *(mm)* | *$IRSL_{50}$* | | *Post-IR $IRSL_{225}$* | | *(mm)* | *$IRSL_{50}$* | | *Post-IR $IRSL_{225}$* | |
| 0.5 | 2.71 | ± 0.04 | 5.19 | ± 0.12 | 0.75 | 2.08 | ± 0.07 | 4.70 | ± 0.13 | 0.5 | 2.24 | ± 0.05 | 5.97 | ± 0.15 |
| 1.5 | 2.69 | ± 0.06 | 6.61 | ± 0.15 | 2 | 2.69 | ± 0.06 | 5.26 | ± 0.12 | 1.5 | 2.58 | ± 0.06 | 9.19 | ± 0.21 |
| 2.5 | 2.90 | ± 0.06 | 8.91 | ± 0.20 | 3 | 2.45 | ± 0.06 | 6.79 | ± 0.16 | 2.5 | 2.63 | ± 0.06 | 9.99 | ± 0.24 |
| 3.5 | 3.19 | ± 0.07 | 10.46 | ± 0.24 | 4 | 2.23 | ± 0.07 | 11.02 | ± 0.56 | 3.5 | 3.77 | ± 0.29 | 13.17 | ± 1.35 |
| 4.5 | 4.29 | ± 0.07 | 11.03 | ± 0.25 | 5 | 3.31 | ± 0.08 | 14.12 | ± 0.48 | 4.5 | 3.89 | ± 0.09 | 11.85 | ± 0.31 |
| 5.5 | 6.11 | ± 0.07 | 10.75 | ± 0.24 | 6 | 4.95 | ± 0.11 | 11.52 | ± 0.33 | 5.5 | 5.79 | ± 0.13 | 13.18 | ± 0.36 |
| 6.5 | 7.34 | ± 0.07 | 10.28 | ± 0.22 | 7 | 5.66 | ± 0.13 | 14.15 | ± 0.43 | 6.5 | 7.15 | ± 0.16 | 13.85 | ± 0.34 |
| 7.5 | 7.06 | ± 0.06 | 12.04 | ± 0.38 | 8 | 6.61 | ± 0.17 | 12.09 | ± 0.39 | 7.5 | 7.99 | ± 0.18 | 13.71 | ± 0.34 |
| 13 | 9.05 | ± 0.07 | 10.39 | ± 0.23 | 9 | 7.14 | ± 0.35 | 11.01 | ± 1.30 | 8.5 | 8.38 | ± 0.19 | 11.30 | ± 0.26 |
| 14 | 8.37 | ± 0.08 | 9.72 | ± 0.21 | 10.3 | 6.57 | ± 0.17 | 7.41 | ± 0.62 | 15 | 6.84 | ± 0.15 | 17.36 | ± 0.62 |
| 15 | 7.56 | ± 0.09 | 9.70 | ± 0.22 | 11.3 | 7.09 | ± 0.16 | 11.40 | ± 1.01 | 16 | 7.39 | ± 0.16 | 12.32 | ± 0.32 |
| 16 | 6.49 | ± 0.10 | 9.89 | ± 0.24 | 12.3 | 6.37 | ± 0.15 | 6.94 | ± 0.30 | 17 | 6.99 | ± 0.15 | 10.95 | ± 0.32 |
| 17 | 6.82 | ± 0.15 | 9.52 | ± 0.23 | 13.3 | 6.35 | ± 0.14 | 6.05 | ± 0.24 | 18 | 6.37 | ± 0.15 | 9.36 | ± 0.27 |
| 18 | 6.81 | ± 0.15 | 10.26 | ± 0.23 | 14.3 | 6.02 | ± 0.14 | 6.04 | ± 0.25 | 19 | 6.29 | ± 0.14 | 20.28 | ± 1.40 |
| 19 | 7.30 | ± 0.16 | 10.63 | ± 0.25 | | | | | | 20 | 6.57 | ± 0.22 | 10.31 | ± 0.43 |
| 20 | 6.93 | ± 0.15 | 10.12 | ± 0.23 | | | | | | 21 | 6.44 | ± 0.15 | 13.33 | ± 0.97 |
| 21 | 6.16 | ± 0.22 | 7.67 | ± 0.79 | | | | | | | | | | |

*Table S2: $L_n/T_n$ values for rock slices from Orrisdale, Data are shown graphically in Figure 6c.*

| ***ORS04-3-A*** | | | | | ***ORS04-3-B*** | | | | |
|---|---|---|---|---|---|---|---|---|---|
| *Depth (mm)* | *$IRSL_{50}$* | | *Post-IR $IRSL_{225}$* | | *Depth (mm)* | *$IRSL_{50}$* | | *Post-IR $IRSL_{225}$* | |
| 0.75 | 1.61 | ± 0.04 | 2.82 | ± 0.07 | 0.75 | 2.78 | ± 0.06 | 3.44 | ± 0.07 |
| 2 | 2.57 | ± 0.06 | 3.41 | ± 0.07 | 2 | 3.10 | ± 0.07 | 3.76 | ± 0.08 |
| 3 | 2.48 | ± 0.06 | 3.28 | ± 0.07 | 3 | 2.93 | ± 0.06 | 3.78 | ± 0.08 |
| 4 | 2.49 | ± 0.06 | 3.88 | ± 0.08 | 4 | 2.83 | ± 0.06 | 4.21 | ± 0.09 |
| 5 | 2.62 | ± 0.06 | 5.36 | ± 0.12 | 5 | 2.63 | ± 0.06 | 6.24 | ± 0.14 |
| 6 | 2.87 | ± 0.06 | 7.60 | ± 0.16 | 6 | 2.54 | ± 0.06 | 8.10 | ± 0.18 |
| 7 | 3.44 | ± 0.07 | 9.37 | ± 0.20 | 7 | 2.64 | ± 0.06 | 8.17 | ± 0.18 |
| | | | | | 8 | 3.01 | ± 0.07 | 8.63 | ± 0.19 |
| | | | | | 9 | 3.20 | ± 0.07 | 8.45 | ± 0.18 |
| | | | | | 10 | 3.17 | ± 0.07 | 8.02 | ± 0.17 |
| | | | | | 11 | 4.29 | ± 0.09 | 8.38 | ± 0.18 |
| | | | | | 12 | 4.58 | ± 0.10 | 7.99 | ± 0.17 |